

TRAFFIC ENGINEERING DIVISION

MARICOPA COUNTY DEPARTMENT OF TRANSPORTATION

Policy/Procedure Guideline

SECTION 3: Traffic & Safety Studies

SUBJECT 3.9: Crosswalk Warrant Study

EFFECTIVE DATE: January 2, 1996

PARAGRAPH: 1. Purpose

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1. PURPOSE:

To formulate a uniform procedure in evaluating a request to install a crosswalk.

2. DESCRIPTION:

A crosswalk warrant study is performed by one person during a one-hour period of maximum conflict between vehicles and pedestrians (when gap availability is most apt to be critical). The two parts of the study is first determining the usable gap times; which is based on the pedestrian crossing time, for the peak hour of traffic on the road and secondly a pedestrian volume count during the same study period. Also it is important to perform a radar spot speed study to record the 85th percentile approach speed from both directions of travel.

Accident history and the engineer's opinion have been eliminated to afford maximum objectivity in determining crosswalk needs. The following warrants are based on a point system evaluation incorporating gap time, pedestrian volumes, vehicle approach speed, and general conditions.

PEDESTRIAN CROSSWALK WARRANTS

<u>WARRANT</u>	<u>MAXIMUM POINTS</u>
(1) Gap Time Warrant	10
(2) Pedestrian Volume Warrant	10
(3) Approach Speed Warrant	5
(4) General Conditions Warrant	<u>8</u>
Maximum Total Points	33

The minimum warrant for the installation of a marked crosswalk at an unsignalized location is satisfied when 16 or more points are accrued, one of which must be for pedestrian volumes. The minimum warrant for considering the installation of a marked crosswalk at a signalized location is satisfied when six or more points are accrued; marked crosswalks should be installed at all signalized intersection which are equipped with pedestrian signal heads.

A marked mid-block crosswalk may be installed if it meets the crosswalk warrants and satisfies the following conditions: the length of the block between intersections must be at least 1,000 feet; there must be a high pedestrian volume generator nearby; and there must be a reasonable demand by the pedestrian to cross within a concentrated area at least 400 feet from the nearest intersection.

3. EXHIBITS:

- a. Completed Usable Gaps & Pedestrian Volume Field Sheet.
- b. Completed Radar Speed Survey.
- c. Completed Crosswalk Warrant Evaluation sheet.
- d. MCDOT - Crosswalk Warrant Study.

4. BACKGROUND:

Until recently, one of the major functions of a marked

crosswalk was considered to be a warning device to motorists. Significantly, 38.2% of the motorist's studies have indicated that many motorists not only fail to perceive and react to crosswalks, but fail to see pedestrians in time to avoid a collision. Since some motorists are unable to avoid hitting pedestrians in well-marked and well-illuminated crosswalks, it would appear that the responsibility for avoiding a collision lies at least as much with the pedestrian as with the motorist. The general public commonly considers a marked crosswalk to be a safety device. However, accident records do not substantiate this popular view. Extensive pedestrian accident studies conducted (covering the years 1963 - 1967 and 1969 - 1970) by the City of San Diego show a disproportionate 5.7 to 1 ratio of accidents in marked verses unmarked crosswalks. When this figure is adjusted in terms of relative crosswalk usage, the accident ratio drops but is still approximately 2 to 1 in marked versus unmarked crosswalks. Evidence suggested that this unfavorable accident record is due to a less cautious pedestrian attitude engendered by a false sense of security and pedestrians utilizing marked crosswalks. Furthermore, studies suggest that the more aggressive pedestrian behavior noted in marked crosswalks may also cause an increase in rear-end collisions. Therefore, the benefits of installing a new crosswalk should always be weighed against the potential increase in traffic accidents.

5. AUTHORIZATION:

A.R.S. 28-643 requires local authorities to install traffic control devices.

28-643. Local Traffic-control devices.

Local authorities in their respective jurisdictions shall place and maintain such traffic-control devices upon highways under their jurisdiction as they deem necessary to indicate and to carry out the provisions of this chapter or local traffic ordinances or to regulate, warn or guide traffic. All traffic-control devices erected shall conform to the state manual and specifications.

6. REFERENCES:

- a. Transportation Laws of Arizona, 1991, Section 28-643. Local

traffic-control devices.

- b. Manual on Uniform Traffic Control Devices For Streets and Highways, 1988. Section 2C-31, Advance Crossing Signs. Section 3B-18 Crosswalks and Crosswalk Lines.

7. ATTACHMENTS:

Non-applicable.

Approved: _____

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